Challenging the Future

KYOCERA

Kyocera combines remote convenience with audiophile performance.

KYOCERA FULL SYSTEM REMOTE CONTROL

STEREO RECEIVER / CASSETTE DECK / COMPACT DISC PLAYER

REMOTE CONTROL ADAPTABLE

THE FIRST REMOTE CONTROL SYSTEM WITH AUDIOPHILE CREDENTIALS

Kyocera's new Stereo Receivers, Cassette Decks and Compact Disc Player demonstrate just how advanced the art and science of music reproduction has become. As the pages of this brochure show, the design, construction, and sheer sonic performance of these Kyocera components represent the best of today's high-end audio. But that's only the beginning of the story.

These sophisticated components form the building blocks of Kyocera's Full System Remote Control network. It's the world's first and only remote-controlled audio system with performance to please even the ardent audiophile — and pushbutton convenience to impress even the jaded sybarite.

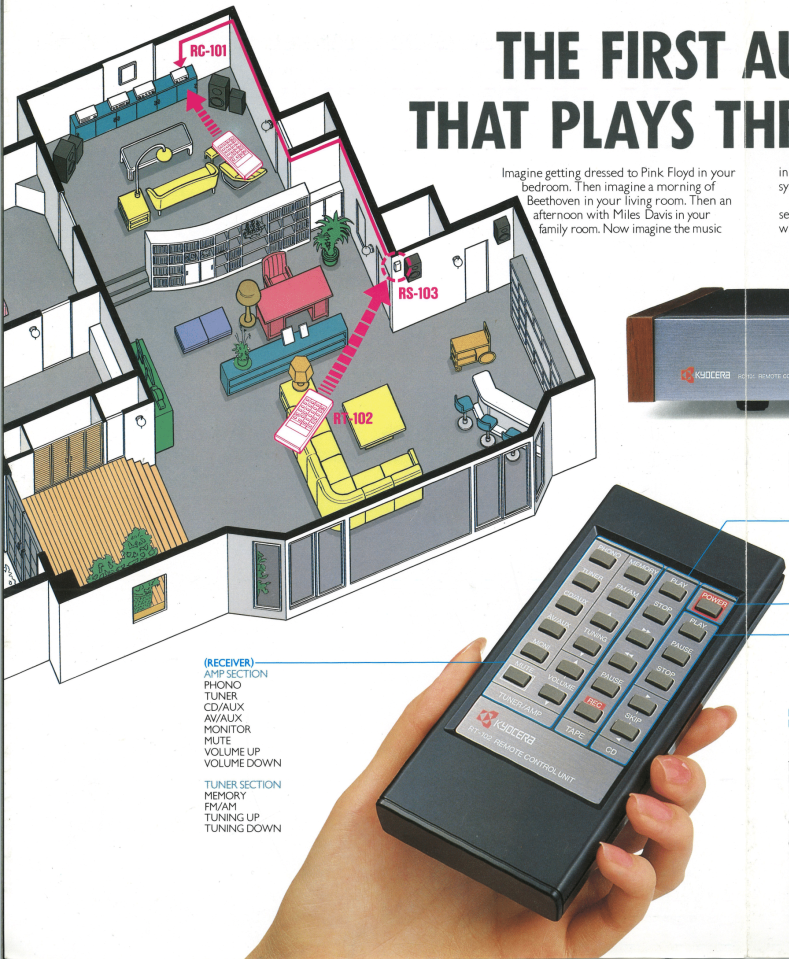
THE FIRST AUDIOPHILE SYSTEM THAT PLAYS THROUGHOUT THE HOME

REMOTE CONTROL ADAPTABLE

Imagine getting dressed to Pink Floyd in your bedroom. Then imagine a morning of Beethoven in your living room. Then an afternoon with Miles Davis in your family room. Now imagine the music in *all three rooms* coming from a single audio system of consummate fidelity.

Not long ago, it would have taken three separate hi-fi systems to accomplish this feat — with tremendous expense and duplication of components. But Kyocera's new Full System Remote Control network has changed all that. For the cost of three separate systems of marginal quality, you can assemble a single Kyocera system of audiophile quality and remarkable simplicity.

The RC-101 Remote Control Center provides connections for two RS-103 Remote Sensors, for music in multiple locations!



RT-102 Infrared Remote Controller: Hold Everything

Here is the infrared unit that puts a complete high-end audio system in the palm of your hand. Just take a look at all the functions the RT-102 has.
RECEIVER: Volume Up/Down; input selection — Phono, Tuner, and CD/Aux; Tape Monitor; FM/AM selection; Memory Preset stations; and Tuning Up/Down plus a special Audio Mute function;
CASSETTE DECK: Play, Stop, Fast Forward, Rewind, Pause and Record;
COMPACT DISC PLAYER: Play, Stop, Pause, Skip Forward, and Skip Back.

RT-102
INFRARED REMOTE CONTROLLER: HOLD EVERYTHING

RC-101 Remote Control Center: The heart of Kyocera Full-System Remote Control

At the center of the Kyocera system is the RC-101, which accepts commands from the RT-102 Hand-Held Remote Control, and sends these commands on to a Kyocera Receiver, Cassette Deck and Compact Disc Player. In addition, there are two rear-panel inputs for hooking up RS-103 Remote Sensors that can be located in other rooms.

RC-101
REMOTE CONTROL CENTER

RS-103 Remote Sensors: Bring Music into Any Room

With the RS-103, you can control your Kyocera remote system from the next room, from upstairs, from anywhere in the house. Hook up additional speakers, and you can bring music to any room.

RS-103
REMOTE SENSOR: BRING MUSIC INTO ANY ROOM

REMOTE CONTROL ADAPTABLE

KYOCERA'S BEST RECEIVER CHALLENGES THE PERFORMANCE OF SEPARATE AMPLIFIERS AND TUNERS.

The Kyocera R-861 stereo receiver meets one specific goal: reproducing music with accuracy and power. Kyocera's top-end hi-fi stereo receiver, the remote-capable R-861, received thorough attention to every detail that affects final sound quality. Both the tuner section and the amplifier section are fully capabile of holding their own when compared to top-quality separate tuners and amplifiers. For instance, the amplifier section utilizes MOS-FETs in the driver stage and similar high-quality devices in all other stages. Unlike other receivers, the circuit design has been refined to improve open-loop performance, thus cutting down the amount of corrective negative feedback required for low-distortion, high-speed performance. There are dvanced control capabilities too, such as a parametric equalizer for fine adjustment of the reproduced sound field. The tuner section delivers accurate reception of stations near and far, with automatic IF bandwidth selection, and more. In short, the R-861 offers a level of sophistication normally found only on the most expensive separate tuners and amplifiers.

MOS-FETs in the driver stage assure pure and natural sound reproduction.

MOS-FETs (Metal-Oxide-Semiconductor Field Effect Transistors) are appreciated by audio engineers and audiophiles alike for their superior transmission characteristics in the audio frequency range, and they are considered by many to be the ideal device for dealing with highly transient signals of digital program sources. The Kyocera R-861 employs them in the driver stage for improved stage-to-stage isolation, reduced input loading, thermal stability and efficiency. And because of their high input impedance, MOS-FETs shut out various forms of interference from the preceding stage and thus amplify and transmit the delicate musical signals with an extremely high degree of purity. The user will appreciate the clear, low-distortion sound quality usually associated with semiconductor amplifying devices, and the warmth and smoothness more characteristic of vacuum tubes. The power of the R-861 — up to 100 Watts per channel* (into 8 ohms) — is all the more enjoyable because it is based on the most advanced technologies for superb sound quality.

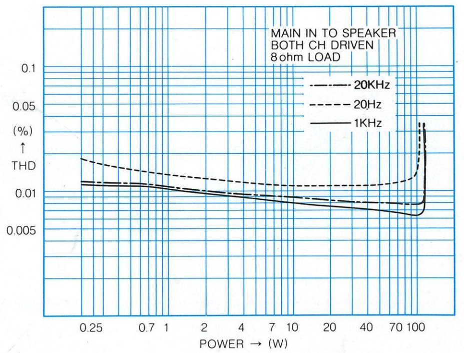
Improved open-loop performance reduces the need for negative feedback; resulting in high-speed circuitry that minimizes TIM distortion.

Traditionally, NFB (negative feedback) has been used as a tool to reduce distortion and improve the signal-to-noise ratio. But too much NFB is known to reduce the operating stability; increase TIM distortion, a form of dynamic distortion; and even result in oscillation at high frequencies. So in the R-861, Kyocera has chosen to use only the highest quality transistors offering superior linearity so as to improve the pre-NFB open-loop performance before the application of NFB. And Kyocera keeps the amount of negative feedback to an absolute minimum. Additionally, a two-pole phase compensator circuit prevents oscillation and distortion, thus enabling transmission of distortion-free signal waveforms through the high frequency range.

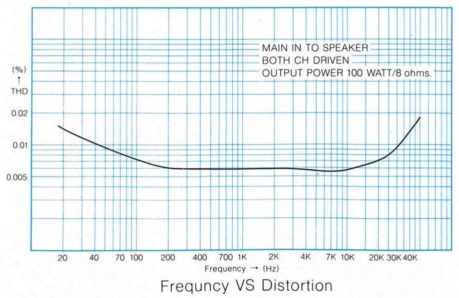
The power amplifier is direct coupled, eliminating all coupling capacitors between stages that tend to generate phase distortion in the low frequency range and thus impair the sound quality. The resulting straight circuit path permits high-speed response to transient musical signals and a very wide dynamic range.

The power supply is fully regulated to continue providing voltage for even the most demanding digital sound sources.

The protection circuit, another cause of distortion in conventional receivers, is a unique, Kyocera-designed frequency and continuous pulse detection system. It offers an expanded range of protection to safeguard the power transistors and speakers from abnormalities without risking deterioration of the final sound quality.



Output Power VS Distortion



Frequncy VS Distortion

OFC and other exotic parts maintain best possible sound quality.

MOS-FETs and high-performance bi-polar transistors in the power amplifier, an oversized power transformer and large-capacity capacitors in the power supply are just a few examples of the quality parts used abundantly in this receiver to ensure top sound quality. Another good example is the use of OFC (Oxygen-Free Copper) cable for the main signal cables. OFC, unlike plain copper, contains no oxygen molecules and possesses little DC resistance, thus permitting pure signal transmission with minimum loss. These and other thoughtful considerations promise maximum listening pleasure for the user.

Built-in MC head amp permits the use of a low-output, high-sensitivity MC phono cartridge.

The increasing popularity of MC phono cartridges gives the average audiophile a wide variety to choose from. The R-861 has a built-in MC head amp to permit the user to use not only an MM cartridge but the latest MC cartridge as well.

The three-band parametric equalizer creates an optimum response curve for the user's particular room.

The location of the speakers; the type and quantity of furniture in the room; and the size and materials used for the carpets, curtains and walls will sustantially change the acoustic characteristics of a room. The R-861 is provided with a three-band parametric equalizer to permit fine adjustment of the receiver's frequency response, so the user can always enjoy flat, uncolored response whatever the conditions in the room may be. The turnover frequency is variable from 100 Hz to 500Hz in the bass, from 500 Hz to 2 kHz in the mid-band frequency range, and from 2 kHz to 10 kHz in the treble, with a plus/minus 10 dB control range for each. Use the equalizer to achieve accurate "flat" response in any room, or to "shape" the sound to personal taste.

Preamp output/main amp input jacks let you connect outboard signal processors, high-powered amplifiers, or multiple amps for sophisticated multi-amp/multi-speaker systems. Other preamplifier features include a subsonic filter to cut out turntable rumble; a high filter to eliminate any scratch noise from a record, tape hiss or simply the high-frequency noise in AM or FM broadcasts; an FM MPX filter to eliminate FM noise resulting from the 19 kHz pilot signal; two sets of tape input/output terminals to permit two-way dubbing or monitor; and direct CD/AV/AUX inputs with independent level controls.

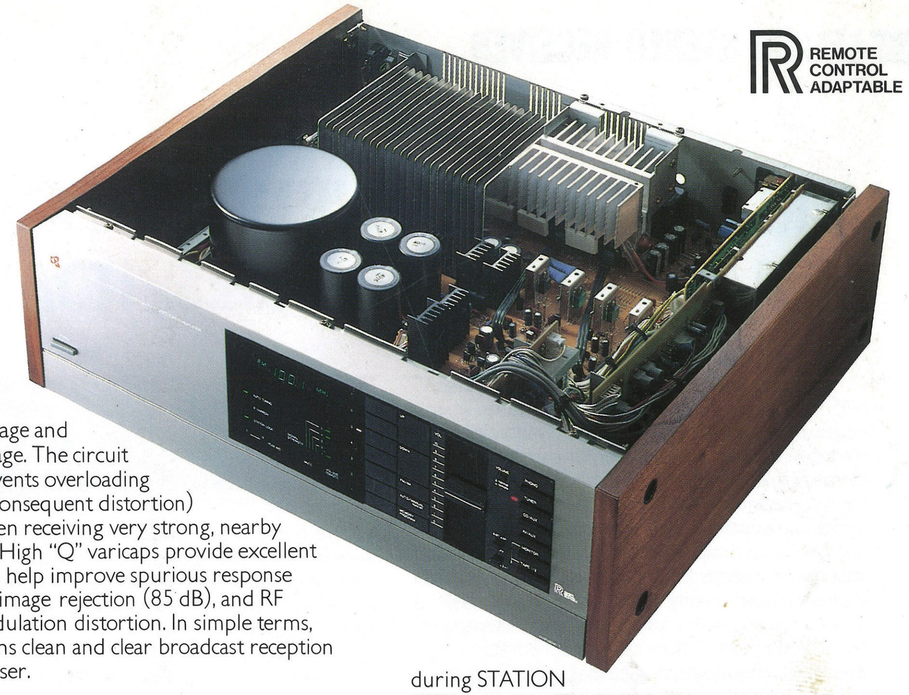
Quartz Phase Lock Loop Frequency Synthesizer Tuner delivers accurate FM reception.

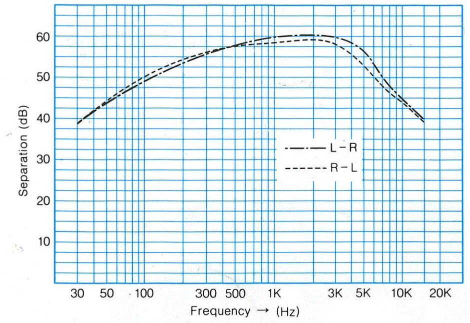
The quality of FM reception depends in large part on accurate tuning. The tuner section of the R-861 is a frequency synthesizer tuner with a quartz phase lock loop, which not only tunes in the frequency of the desired broadcast station with pinpoint accuracy, but locks it in indefinitely. It delivers stable and clear reception, free of frequency drift even in the face of variances in temperature and other factors both internal and external. Unlike most synthesis receivers, the Kyocera R-861 uses a comparator that operates at a frequency outside the audible range. This results in much better S/N performance (82 dB, mono).

The tuner's memory stores up to 14 stations (seven FM, and seven AM), any of which can be recalled with a simple touch. A back-up power supply protects the memory should the user unplug the power cable or should a power blackout occur. There's also an extra convenience, called Station Seek, which permits the user to quickly locate those broadcast stations which can be received with reasonable signal quality. This makes memory setting easy.

FM front-end is also designed for the best sound quality possible.

As the front-end determines the basic performance of a tuner, every care has been taken in its design to ensure the best sound quality possible. For instance, a dual-tuned automatic gain control circuit using dual-gate MOS-FETs is provided in the RF stage and mixer stage. The circuit also prevents overloading (and its consequent distortion) even when receiving very strong, nearby stations. High "Q" varicaps provide excellent tracking, help improve spurious response (95 dB), image rejection (85 dB), and RF intermodulation distortion. In simple terms, this means clean and clear broadcast reception for the user.





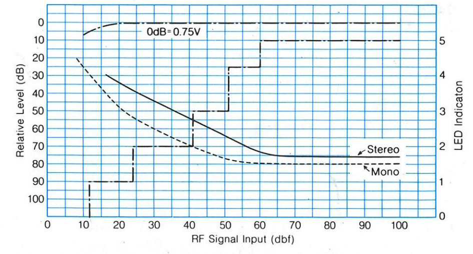
FM Channel Separation

Automatic IF bandwidth switching (WIDE/NARROW) avoids interference from strong adjacent stations.

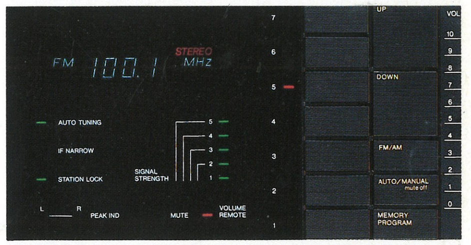
Automatic IF bandwidth switching prevents a strong neighboring station from interfering with the desired broadcast signal and muddying the received sound. Under normal reception conditions, the bandwidth is set for WIDE for maximum sound quality; should an adjacent high-level signal begin to cause "beat interference," the bandwidth is automatically switched to NARROW to shut out the interfering station.

Another outstanding feature is the micro-computer-controlled muting circuit that avoids spurious signals between high-level stations during STATION SEEK operation. The built-in microcomputer judges whether the received signal is a genuine broadcast signal or merely ghost noise.

There are many other advanced features in the tuner section, such as: switchable deemphasis for Dolby* FM broadcasts, a quadrature detector circuit and a negative feedback chopper type demodulator in the FM MPX section that together provide a high S/N ratio, high channel separation and low distortion. Contrary to common design practice, the fluorescent digital display is driven by a non-switching power supply, for lower noise.



FM INPUT LEVEL VS STN RATIO
& SIGNAL LEVEL INDICATION



R-861

AM/FM STEREO RECEIVER

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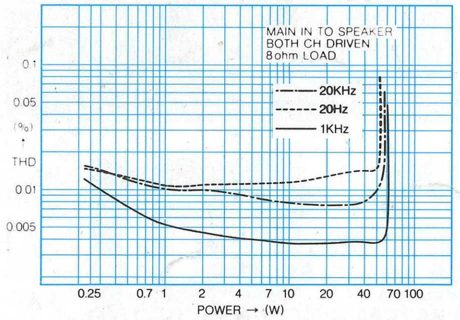
*Continuous power output: 100 Watts per channel, RMS, both channels driven into 8 Ohms, from 20 Hz to 20 kHz, at no more than 0.02% THD.

A RECEIVER THAT WILL SAFISFY DEMANDING AUDIOPHILES.

Impressive power output (70 Watts per channel*) is only one chapter in the R-661 story. If you read on you'll discover the rest: incredibly smooth, clean sound, and operating versatility to please any audiophile. In fact, the R-661 inherits from Kyocera's sophisticated R-861 every element critical to sound quality and operating convenience. As in its more expensive brother, every vital circuit and part that can have an affect on ultimate sound quality was carefully scrutinized by Kyocera engineers, and put through exhaustive listening tests before being incorporated into the design. Two technologies that reflect Kyocera's attitude toward perfection are the use of MOS-FET's in the driver stage and a high-frequency phase comparator in the tuner. The R-661 is an extraordinary hi-fi receiver by any measure.

Powerful, crystal clear reproduction of even digital programs with the use of MOS-FETs.

In the driver stage, Kyocera employs expensive MOS-FETs. These high-speed devices are an excellent choice for audio use because they prevent various forms of interference from the preceding stage from leaking into the signal. The amp section uses less negative feedback thanks to improved open-loop performance. The result is much less sound-degrading TIM distortion. The power amplifier is direct-coupled to prevent phase distortion at lower frequencies. Only the finest parts and devices are used in the amplifier circuits of the R-661, such as oxygen-free copper wire for the main signal cables. This attention to detail is just one example of how this Kyocera receiver is ready to handle the most demanding recordings, including digital.



Output Power Distortion

*Continuous power output: 70 Watts per channel, both channels driven into 8 Ohms, from 20 Hz to 20 kHz, at no more than 0.02% THD.

For added flexibility, Preamp Out/Main Amp Input jacks let you connect outboard signal processors, high-powered amplifiers or additional amplifiers for sophisticated multi-amp/multi-speaker systems.

Parametric tone controls enable you to correct tonal coloration.

Like the top-of-the-line R-861, the R-661 is equipped with versatile parametric bass and treble controls. The bass control lets the user pinpoint a turnover frequency between 100 Hz and 500 Hz, and the treble a frequency between 2 kHz and 10 kHz. The adjustment range is ± 10 dB. These controls let the listener fine-tune system response to the acoustic characteristics of his listening room, or adjust sound to personal taste.

Tuning of FM and AM stations is both accurate and easy.

The tuner section of the R-661 is also designed for top sound quality. The quartz phase lock loop frequency synthesizer method is used for pinpoint tuning accuracy, and the front end is equipped with automatic gain control using dual gate MOS-FETs. The tuner's comparator circuit operates outside the audible range, for improved low-noise performance (S/N 80 dB, mono). For excellent sensitivity, Kyocera utilizes high "Q" variable capacitors in RF tuned circuits. As a result spurious interference, image frequency interference, and radio frequency intermodulation distortion are reduced to a minimum. For tuning convenience, the tuner section is equipped with one-touch station preset buttons for 7 FM and 7 AM stations. Stations can also be located easily, even in urban areas, by means of computer-controlled auto scanning.

Professional MC head amp extends the receiver's capabilities.

MC cartridges are the first choice of audiophiles in the know because of their fast transient response and natural sound. The R-661 is equipped with an integrated MC head amp for low-noise direct connection of an MC phono cartridge with the receiver.

- **IF band selector (wide/narrow)** To minimize adjacent channel interference.
- **Quadrature detector circuit and negative feedback chopper type demodulator in the FM MPX section** Provide a high S/N ratio, good channel separation and low distortion.
- **Fluorescent digital display** Driven by a non-switching power supply to prevent noise.
- **Subsonic filter** Cuts undesirable low-frequency noise.
- **High filter** Cuts high-frequency noise.
- **FM MPX filter** Cuts 19 kHz pilot signal noise from FM signals.
- **Direct CD/AV/AUX inputs** With independent level controls.
- **Two tape monitors** With bi-directional dubbing.
- **Frequency and pulse duration type detection and protection system** Protects power circuits and speakers from damage.
- **Feather-touch switches**

R-661

AM/FM STEREO RECEIVER

A SUPER-PERFORMANCE RECEIVER AT A SURPRISINGLY ATTRACTIVE PRICE.

Kyocera's newly developed R-461 AM/FM stereo receiver simply sounds better than other receivers in its price class. This performance results from Kyocera's state-of-the-art engineering expertise and the generous use of high-end audio parts throughout every section of the receiver.

The amplifier section, for example, uses high-speed MOS-FET drivers, enabling the R-461 to efficiently handle even the most demanding digital program material. The tuner section of this model is designed to achieve both premium performance and operating convenience. It has a quartz phase lock loop frequency synthesizer for easy and accurate access to the stations of the user's choice.

Audiophiles who measure the performance of audio components in terms of power figures will be truly astonished by the crystal clarity and outstanding dynamic performance of the R-461 created by just 50 Watts per channel* output.

MOS-FETs are the key to efficient and smooth reproduction in the R-461.

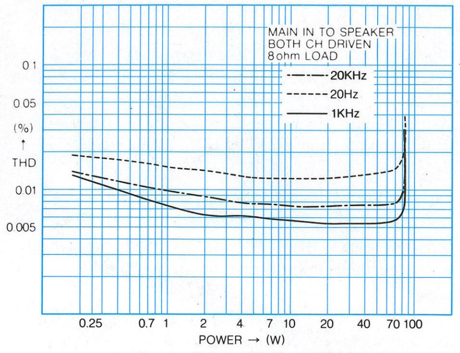
The use of MOS-FETs in the driver section leads to a wider dynamic range and more stable transient characteristics. In the R-461, these MOS-FETs are used by Kyocera to improve the sound quality of both conventional sound sources as well as burgeoning digital sources.

Together with their excellent efficiency and admirable thermal stability, MOS-FETs also offer sonic clarity and better dynamic characteristics — in other words, smooth and natural sound.

Kyocera has applied the "straight-wire-with-gain" approach for high-speed reproduction.

The R-461's circuit is designed according to the "straight-wire-with-gain" concept to maintain the purest form of signal transmission. Negative Feedback (NFB) which is commonly used to minimize amplifier distortion and improve S/N ratio, is often overused and results in amplifier instability and TIM distortion. For this reason, Kyocera designed a circuit that optimized open-loop performance and minimized the need for NFB; thus decreasing TIM distortion. To compensate for the maximized open loop gain, Kyocera applied 2-pole phase compensation to the circuit and developed a unique protection system (frequency and continuous pulse duration type detection and protection mechanism) that does not adversely affect the signal.

Preamp out/Main Amp Input jacks let you connect outboard signal processors, high-powered amplifiers, or additional amplifiers for sophisticated multi-amp/multi-speaker systems.



Output Power VS Distortion

*Continuous power output: 50 Watts per channel, RMS, both channels driven into 8 Ohms from 20 Hz to 20 kHz at no more than 0.02% THD.

Quartz Phase Lock Frequency Synthesizer tuner for pin-point tuning accuracy.

If a listener wishes to enjoy hi-fi quality reception from an FM station, it is imperative that the station be tuned accurately. In the R-461, frequency synthesis achieves pin-point tuning accuracy every time. Once it locks onto the station frequency, reception is never affected by drift or other influences.

Kyocera's devotion to superb reproduction can also be observed in the front-end. The R-461 is equipped with automatic gain control using a dual gate MOS-FET and high "Q" varicaps. As a result the effects of spurious interference, image interference, and RF intermodulation are dramatically reduced.

Programmable memory permits the user to preset up to 6 AM and 6 FM stations.

By just touching one of six buttons on the front panel of the receiver, the user can recall any of 6 FM or 6 AM stations. The tuner section also has a two-level computer-controlled auto scanning mode, which automatically seeks and tunes stations up and down the broadcast bands. A Hi/Low muting selector adjusts reception sensitivity according to the user's needs, even in signal-congested areas.

- **Linear phase ceramic filter** Used in the IF stage to realize both high quality sound and high selectivity.
- **Fluorescent digital display** Driven by a non-switching power supply to prevent noise.
- **Two tape monitors**
- **Direct CD/AV/AUX inputs** With independent level controls.
- **Subsonic filter** Cuts undesirable low-frequency noise; 12 dB/octave at 18 Hz.
- **High filter** Cuts high-frequency noise.
- **Bass/treble controls** High and low frequencies can be controlled over a wide ± 10 dB range.
- **Loudness control** Emphasizes the frequency extremes when listening at low levels.

R-461

AM/FM STEREO RECEIVER

KYOCERA OVERTURNS THE "COMMON WISDOM" ON CASSETTE DECKS.

Most cassette deck manufacturers promote three-head decks as the only way to produce wide frequency response and low noise. The Kyocera D-811 proves that it just isn't so. The sound is crystal clear, response extends to the highest audible frequency, realism and presence are without peer. Indeed, the D-811 boasts wide response from 20 to 22,000 Hz and an S/N ratio of better than 78 dB (Dolby C NR on).

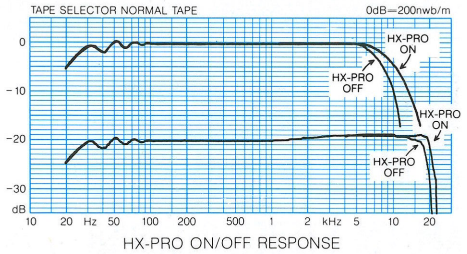
The most audible shortcoming of today's decks is wow and flutter. That's why Kyocera spent so much time and attention on the tape transport. It's a direct-drive, closed-loop dual-capstan transport for accurate speed control and less than 0.02% wow and flutter. Because recording and playback are performed by the same head, there's no azimuth error between recording and play. The amplifiers use simplified circuit designs for lower noise and distortion. And Dolby* HX Pro is incorporated to expand dynamic range capabilities. The D-811 is for the music lover seeking nothing less than perfection, with the convenience of remote control.

Dolby HX Pro expands the deck's dynamic capabilities so wide dynamic range recordings can be recorded intact.

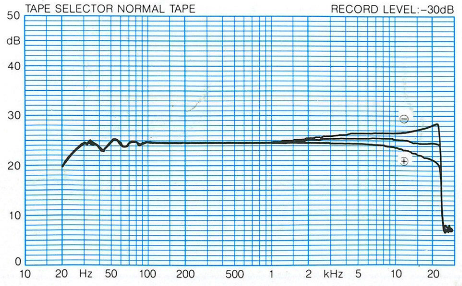
When recording on cassette tape, a deck superimposes a bias current on the musical signal to ensure low distortion. In conventional decks, that bias is fixed at a value which yields the best compromise between high output and accurate response. However, high-level, high-frequency signals tend to behave like additional bias. This "self-bias" results in lost high frequencies, which dull the sound.

The D-811 incorporates the Dolby HX Pro headroom extension circuit to prevent that from happening. The circuit automatically varies the bias depending on the frequency content of the music being recorded, and reduces it when detecting 10 kHz or higher frequencies in the music. This results in improved high-frequency response: in other words, the dynamic range at high frequencies is significantly wider, and the sound acquires a new level of clarity.

Dolby HX Pro requires no switching and no reciprocal decoding on playback: an HX Pro tape can be enjoyed on just about any deck equipped with regular Dolby B or C noise reduction.



HX-PRO ON/OFF RESPONSE



FINE BIAS RESPONSE

A direct-drive dual-capstan tape transport for incredibly accurate tape control.

Among competing cassette decks, the tape transport separates the front-runners from the also-rans. That's because accurate recording and playback is possible only on a transport that controls the tape motion with utmost precision. In the D-811, therefore, Kyocera uses two motors to drive the tape, a precise brushless FG servo motor couples directly to the take-up capstan, thus improving speed accuracy. A second, completely separate motor handles spooling, fast-forward, and rewind — eliminating the complex speed reduction/power transmission systems necessary for other transport designs.

Moreover, two capstans in a closed-loop configuration ensure that the segment of tape running across the heads remains taut and aligned. The audible advantages of this sophisticated design are (1) it prevents the transmission of vibration from reel to tape; (2) it reduces modulation noise; and (3) it reduces the occurrence of dropouts and level variations.

It is no coincidence, therefore, that the D-811 boasts unusually low wow and flutter of just 0.02% (WRMS). The listener will never detect the slightest trace of wavering pitch even in a single, sustained piano note.

A separate motor gently inserts the heads into the cassette to maintain the most accurate head-to-tape contact.

In place of the usual solenoid, there's a third motor. Its sole purpose is to insert the heads into the cassette. The additional motor makes operation quicker and quieter. Moreover, because the mechanism moves the heads to the tape gently, there's no chance of the tape being damaged or the head coming out of proper azimuth alignment, even slightly. As a further protection for the tape, magnetic braking on both reels provides a quick but smooth stop after fast-forward or rewind.

High-performance heads extract the best possible sound from every tape — 20 to 22,000 Hz frequency response from metal.

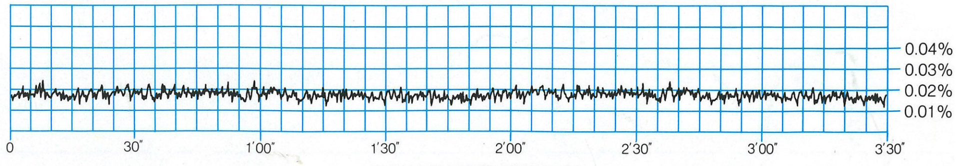
Kyocera has chosen a high-performance Sendust alloy head for recording and playback in the D-811. Thanks to its high permeability and high magnetic flux density, the head offers frequency response better than most three-head decks: from 20 Hz to 22,000 Hz. Further, its electromagnetic properties are a perfect match for high-coercivity metal tape. A second head, made of low-wear ferrite, is responsible for erasing signals on a tape and making clean re-recording possible.

Dolby B/C noise reduction eliminates tape hiss.

Hiss noise, for all practical purposes, is completely inaudible with the D-811. Responsibility for this goes to the built-in Dolby B and C noise reduction systems. The first reduces noise by about 10 dB at high frequencies, while the second reduces the subjectively more objectionable noise between 2 kHz to 5 kHz and yields high frequency noise reduction of about 20 dB.

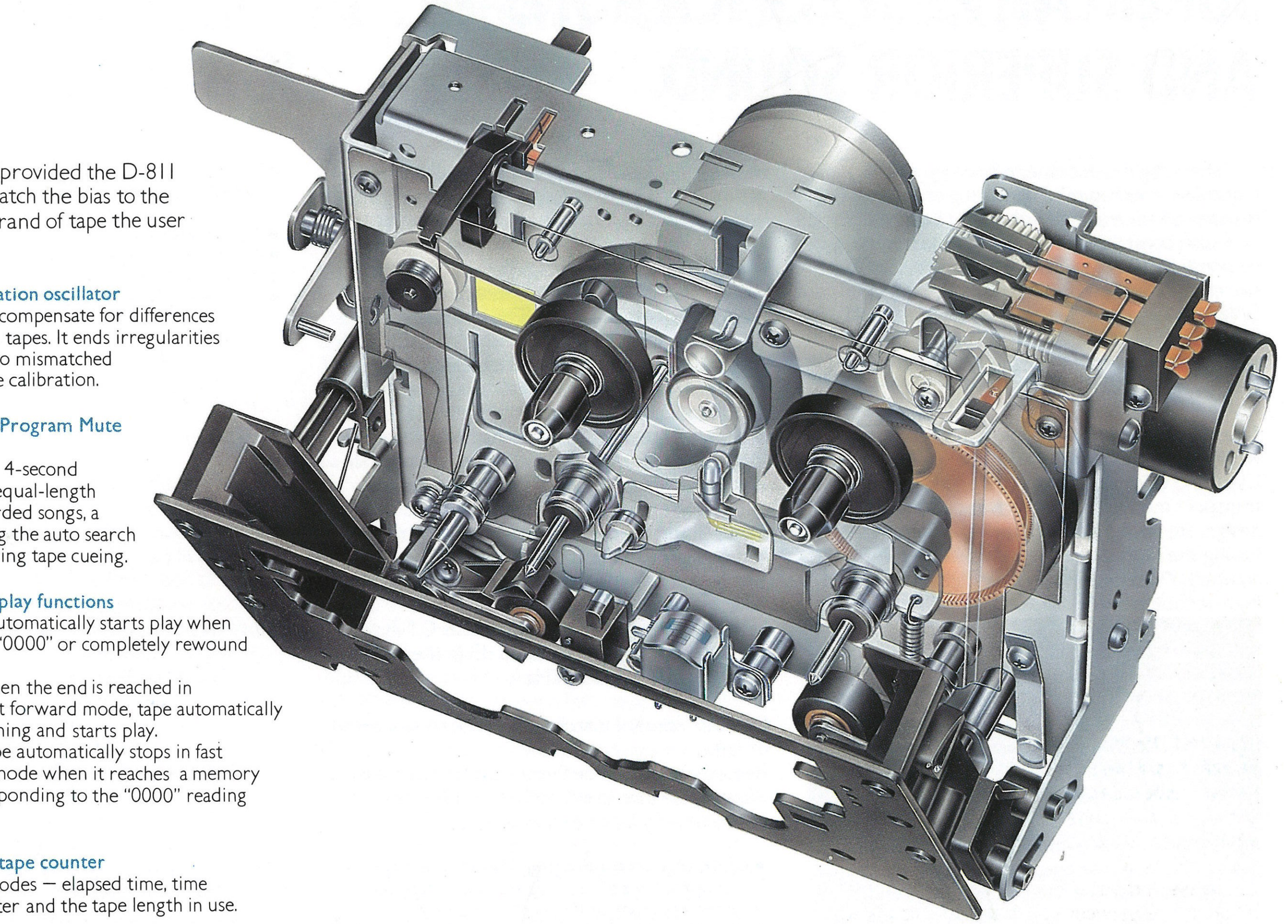
Fine bias control optimizes the deck to the magnetic properties of any tape.

Whatever its type (metal, chrome, chrome-equivalent, etc.) or make, every tape yields best results when given optimum bias during recording. So Kyocera has provided the D-811 with a control to match the bias to the properties of any brand of tape the user chooses.



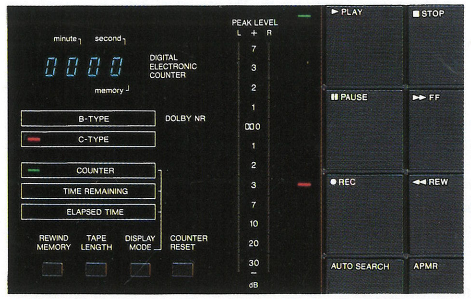
WOW & FLUTTER RESPONSE

REMOTE CONTROL ADAPTABLE



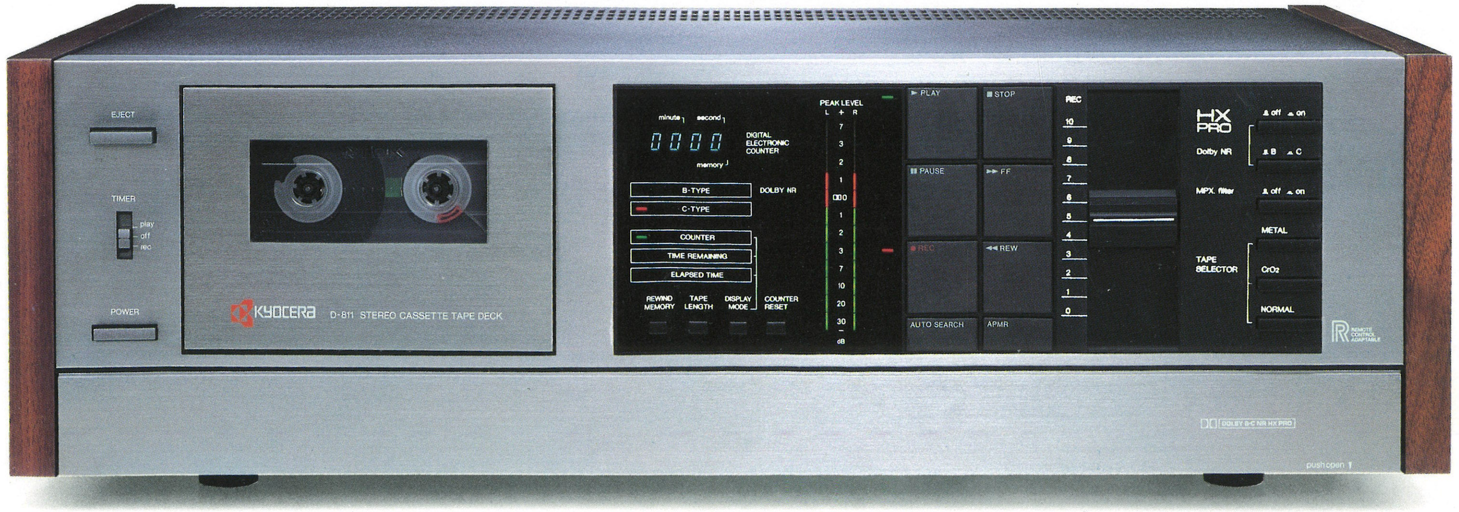
- **Record level calibration oscillator**
  This makes it easy to compensate for differences in sensitivity between tapes. It ends irregularities and aberrations due to mismatched Dolby encode/decode calibration.
- **APMR (Automatic Program Mute Recording)**
  Automatically creates 4-second silences so there are equal-length breaks between recorded songs, a necessity for activating the auto search feature. Also aids during tape cueing.
- **Versatile memory-play functions**
  AUTO PLAY: Tape automatically starts play when rewound to counter "0000" or completely rewound to the beginning.
  AUTO REPEAT: When the end is reached in recording, play or fast forward mode, tape automatically rewinds to the beginning and starts play.
  MEMORY STOP: Tape automatically stops in fast for ward or rewind mode when it reaches a memory indexed point corresponding to the "0000" reading on the tape counter.
- **4-digit fluorescent tape counter**
  Offers four display modes — elapsed time, time remaining, tape counter and the tape length in use.
- **Multiplex filter**
  Assures clear recording off the air by removing 19 kHz pilot signal contained in FM signals.
- **Tape selector switch**
  Applies optimum bias and equalization for every type of tape used.
- **Timer switch**
  Makes it possible to record off the air unattended, or start a tape as wakeup music.

- Peak level indicator with peak hold
- Headphone volume control
- Output volume control
- Soft-eject cassette door



D-811

DUAL-CAPSTAN CASSETTE DECK



SUPERLATIVE SPECIFICATIONS--- AND SUPERIOR SOUND.

Inheriting much of the technology and meticulous mechanical engineering of the more expensive Kyocera D-811, the D-611 cassette deck also boasts an exceptionally wide frequency response of 20 Hz to 22,000 Hz (metal tape) and extremely low wow and flutter of just 0.035% (WRMS). Good specs aside, the Kyocera D-611 is so easy to use that anyone can use it with confidence, as part of their full system remote control network or separately.

A precise tape-transport mechanism reduces wow and flutter down to the audible threshold.
Clear and crisp sound depends on a deck's tape transport mechanism as much as on its head design. So, having isolated wow and flutter as having the most damaging influence on musical accuracy, Kyocera engineers selected an accurate, high-torque brushless FG servo motor for the D-611, and coupled it directly with the capstan that drives the tape. By foregoing the slip-prone speed reduction/power transmission system found in other decks, the Kyocera direct capstan drive system reduces wow and flutter to a mere 0.035% (WRMS) — a figure unusually good for a cassette deck with a single capstan.

Moreover, a separate DC motor is employed to move the tape in the fast forward and rewind modes. Because of its beltless and clutchless design, the tape is fast wound in either direction with constant torque from beginning to end.

In place of the typical solenoid, the D-611 has a third motor. It gently inserts the heads into the cassette at the touch of a tape-control button. Its action is so smooth that tape damage is unthinkable, as is head misalignment.

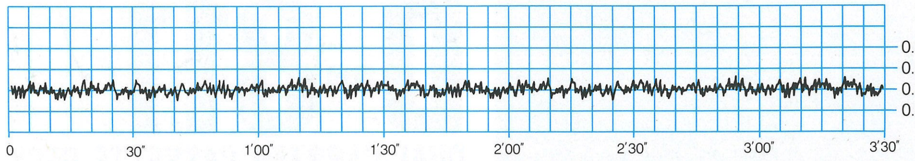
High-performance head offers frequency response to 22,000 Hz and outstanding results with metal tape.
A single head is responsible for both recording and playback, thus eliminating the possibility of azimuth error between the recording and playback gaps of 3-head decks. The head has a Sendust core featuring high permeability and a high magnetic saturation flux density. The combined result is wide frequency response spanning from 20 Hz to 22,000 Hz. Naturally, both the record/play and erase heads are fully compatible with high-coercivity metal tape, allowing the user to enjoy wide dynamic range and low distortion.

Dolby B and C noise reduction systems make hiss noise inaudible and totally harmless.
The Kyocera D-611 features not only Dolby B noise reduction that cuts noise by about 10 dB at higher frequencies, but also Dolby C NR to reduce noise by as much as 20 dB in the critical range from 2 kHz to 5 kHz.

Fine bias control matches the deck to any brand of tape.
Recording bias can be finely adjusted manually allowing the user to extract best possible performance from any tape he chooses to use.

- **APMR (Automatic Program Mute Recording)** To automatically add four-second blanks between recorded programs at the touch of a button.
- **Auto Play and Repeat** For more convenient playback.
- **Memory Stop** To stop tape on "0000" reading on the tape counter.
- **Multiplex Filter** To assure clear sound when recording FM broadcasts.
- **Timer Switch** For unattended recording or playback in combination with an optional timer.

- Tape selector switch.
- Peak level indicator.
- Output volume control.
- Soft-eject cassette loading door.



WOW & FLUTTER RESPONSE

D-611
DIRECT DRIVE CASSETTE DECK

REMOTE CONTROL ADAPTABLE

THE MAGNIFICENT SOUND OF COMPACT DISCS TOGETHER WITH THE LUXURY OF FULL SYSTEM REMOTE CONTROL.

To complete the Full-System Remote Control concept, Kyocera created a new Compact Disc player, the DA-610. This remarkable component brings home the superlative sound quality of digital audio — sound that's better than FM broadcasts, better than LP records, and better than cassette tapes. What's more, the remote control capabilities of the Kyocera DA-610 make the best possible use of the convenience inherent in the CD format.

Digital audio, the highest-quality high-fidelity source.
Each one of those small, durable Compact Discs stores up to one hour of music in the form of 6 *billion* bits of computerized digital information. So you get unprecedented playback specs like 90 dB dynamic range, total harmonic distortion of less than 0.005%, and flat frequency response across the entire range of human hearing. If you've never experienced the sound of a Compact Disc player, you've never heard just how good home audio can be.

Unprecedented access capabilities.
For all of you who are accustomed to searching for songs on cassette tapes, or hunting for the lead-in groove on LPs, the music access features of the Kyocera DA-610 will seem like a taste of the 21st century. Instead of forcing you to find the start of a song, the DA-610 does it automatically. A Skip Forward button automatically leaps ahead to the start of the next song. Skip Back returns to the beginning of the present song. Press the buttons repeatedly, and you can quickly get to any song on the disc!

Are there songs on the disc you'd rather not hear? The programming function of the DA-610 lets you hear only the songs you want. You can program up to 16 selections in any sequence, repeating the songs you like and skipping the ones you don't.

The Repeat functions allow you to repeat an individual song, repeat the entire disc, or repeat your specially programmed sequence for as long as you like.

While you're enjoying these features, a special fluorescent display keeps you informed of the track number, the time elapsed (of current track and programmed track) and time remaining (of current track, entire disc and entire programmed tracks), as well as operating mode.

Dedicated remote control for maximum flexibility.
To make the Kyocera DA-610 suitable for all types of stereo systems, it comes supplied with its own "dedicated" wireless remote control. This slender hand-held unit duplicates the principal front-panel controls, including Play, Stop, Pause, Skip Forward and Back, Fast Forward, Fast Reverse, and Repeat. Of course, for the maximum in remote control luxury, nothing measures up to the Full System Remote Control network, of which the Kyocera DA-610 is just one part.

Elaborate circuit design with emphasis on the highest sound quality and purity.
The ultimate quality of a CD player depends on the attention that has gone into its non-digital circuitry as well as its digital circuitry. In the DA-610, Kyocera uses spacers made of non-resonant Fine Ceramics, placed between the PC board and the chassis to reduce harmful vibration. Two independent power supplies are used, one for digital and one for analog circuitry, to prevent digital noise from mixing with analog signals. And, quality parts are used throughout, like low-distortion capacitors featuring LC-OFC (Oxygen-Free Copper) leads.

Three beams keep the laser on track.
Instead of a needle in a groove, Compact Disc players use a sophisticated semiconductor laser to read a track of reflective signal "pits" coated in protective clear plastic. At only 1.6 micrometers wide, the pits must be tracked with literally microscopic precision. In Kyocera's three-beam design, the center beam reads the music, while the two outer beams watch out for mistracking. This results in effective, reliable tracking, for uninterrupted listening pleasure.

16-bit digital conversion for full sonic resolution.
To capture the full sonic potential of Compact Discs, Kyocera converts all 16 bits of the digital signal into analog output. An engineer would say this results in 90 dB dynamic range, 90 dB stereo separation, and 0.005% THD. You'll say it results in spectacular sound.

- **Variable line output control** Output varies from 0 to 4 V, providing enough voltage to drive a power amplifier directly.
- **Gold-plated output connectors** Provide the highest possible conductivity, to minimize noise between the DA-610 and the receiver.
- **Timer switch control** Optional timer controls on/off function.
- **Headphone output with volume control** For convenient private listening.
- **Horizontal disc loading drawer** Maintains the slender profile of the DA-610.
- **Disc loaded/not loaded indicator display**
- **Tray open/closed indicator display**

DA-610
COMPACT DISC PLAYER

Specifications

RECEIVERS	R-861	R-661	R-461
(Audio section)			
Power output RMS (both ch. driven into 8 ohms with no more than 0.02% THD, 20Hz–20kHz)	100W/ch	70W/ch	50W/ch
Dynamic short-term power (at 1kHz) (8 ohms) (4 ohms) (2 ohms)	120W/ch 180W/ch 230W/ch	80W/ch 110W/ch 140W/ch	80W/ch 110W/ch 125W/ch
Total harmonic distortion (at rated output)	0.02%	0.02%	0.02%
Power bandwidth (–3dB rerated power)	10Hz–60kHz	10Hz–60kHz	10Hz–60kHz
Intermoduration distortion (at rated output) (SMPTE)	0.02%	0.02%	0.02%
Slew rate	50V/μsec.	50V/μsec.	40V/μsec.
Rise time	1.0μsec.	1.0μsec.	1.5μsec.
Input sensitivity			
Phono MC (100 ohms)	125μV	125μV	–
Phono MM (47k ohms/100pF)	2.5mV	2.5mV	2.5mV
Others (30k ohms)	150mV	150mV	150mV
Maximum input voltage (at 1kHz, 0.5% THD)			
Phono MC	8mV	8mV	–
Phono MM	150mV	150mV	150mV
Others (with vol. at max. position) (direct CD/AUX, AV/AUX input)	1.3V	1.3V	1.3V
Signal-to-noise ratio (IHF short circuited, A-weighted at rated output)			
Phono MC	68dB	64dB	–
Phono MM	88dB	82dB	80dB
Others	100dB	100dB	95dB
Signal-to-noise ratio (IHF A-202)			
Phono MC	74dB	70dB	–
Phono MM	85dB	82dB	82dB
Others	90dB	90dB	89dB
Dynamic headroom	1.0dB at 8 ohms	1.0dB at 8 ohms	2.1dB at 8 ohms
Damping factor (8 ohms at 50Hz)	60	60	40
Tone control			
Bass at 100Hz	±10dB	±10dB	±10dB
Midrange at 800Hz	±10dB		
Treble at 10kHz	±10dB	±10dB	±10dB
Turnover Frequencies			
Bass control	100–500Hz	100–500Hz	–
Midrange control	0.5–2kHz	–	–
Treble control	2–10kHz	2–10kHz	–
Loudness compensation (volume at –30dB) at 100Hz	+8dB	+8dB	+8dB
at 10kHz	+2dB	+2dB	+2dB
High filter (6dB/oct.) at 10kHz	–6dB	–6dB	–6dB
Subsonic filter (12dB/oct.) at 18Hz	–3dB	–3dB	–3dB
Tape recording output level (at rated input sensitivity)	130mV	130mV	130mV
(FM section)			
Tuning range	87.5–108MHz	87.5–108MHz	87.5–108MHz
Usable sensitivity (MONO)	9.8dBf	10.1dBf	10.3dBf
50dB quieting sensitivity (MONO)	14.8dBf	15.5dBf	17.0dBf
(STEREO)	35.8dBf	36.5dBf	37.2dBf
Capture ratio (normal IF)	1dB	1dB	1.2dB
Distortion (normal IF) (MONO) at 1kHz	0.06%	0.07%	0.08%
(STEREO) at 1kHz	0.07%	0.1%	0.12%
Separation (normal IF) at 1kHz	58dB	55dB	48dB
High blend (at 1kHz separation)	20dB	–	–
Frequency response (30Hz to 15kHz)	+0/–0.5dB	+0/–0.5dB	+0/–1.0dB
Signal-to-noise ratio			
(Mono A weighted)	82dB	80dB	77dB
(Stereo A weighted)	76dB	74dB	72dB
Stereo threshold	20/40dBf	20/40dBf	20/40dBf
Muting threshold	20/40dBf	20/40dBf	20/40dBf
Alternate channel selectivity			
(Normal IF)	40dB	40dB	55dB
(Narrow IF)	81dB	75dB	–
Spurious rejection	95dB	88dB	86dB
IF rejection	120dB	110dB	100dB
Image rejection	85dB	68dB	68dB
Subcarrier product ratio	65dB	65dB	58dB
Recording output voltage	0.75V	0.75V	0.75V
Antenna provision	Unbalanced 75 ohms 300 ohms adapter	→	→
(AM section)			
Tuning range	520–1710kHz	520–1710kHz	520–1710kHz
Usable sensitivity (S/N=20dB)			
(Loop antenna)	300μV/m	300μV/m	300μV/m
(Direct terminal)	20μV	20μV	20μV
Signal-to-noise ratio	50dB	50dB	50dB
IF rejection	60dB	60dB	60dB
Selectivity (+20kHz)	45dB	45dB	45dB
Distortion	0.3%	0.3%	0.3%
Recording output voltage	0.3V	0.3V	0.3V
Image rejection	40dB	40dB	40dB
(General)			
Power requirements	AC 120V 60Hz	AC 120V 60Hz	AC 120V 60Hz
Power consumption	320W	210W	175W
Dimensions			
Width	18-1/8" (460mm)	18-1/8" (460mm)	18-1/8" (460mm)
Height	5-3/16" (132mm)	5-3/16" (132mm)	4-5/16" (110mm)
Depth	14-3/16" (360mm)	14-3/16" (360mm)	13-3/8" (340mm)
Weight	27 lbs. (12.3kg)	25 lbs. (11.7kg)	18 lbs. (8.2kg)

CASSETTE DECKS	D-811	D-611
(Electrical)		
Recording bias frequency (AC bias type)	105kHz	105kHz
Erasure system	AC type	AC type
Head Record/playback	Sendust	Sendust
Erasure	Ferrite	Ferrite
Frequency response (response ±3dB) (Overall frequency response at –25dB VU)		
Metal	20Hz–22kHz	20Hz–22kHz
CrO2	20Hz–20kHz	20Hz–20kHz
Normal	20Hz–20kHz	20Hz–20kHz
Signal-to-noise ratio (DIN 45500/70μsec. EQ tape)		
NR out weighted (A) Metal	58dB	58dB
Dolby B type NR effect (WTD CCIR) Metal	10dB	10dB
Dolby C type NR effect (WTD CCIR) Metal	20dB	20dB
Input sensitivity 10k ohms Mic	0.5mV	0.5mV
50k ohms Line	70mV	70mV
Output OVU level Line	580mV	580mV
at 8 ohms Headphone	100mV	50mV
Harmonic distortion (1kHz OVU level) Line	1.5%	1.5%
Separation (Band pass filter, 1kHz) Line	40dB	40dB
Erasure effect (Band pass filter, 1kHz +10dB VU level	70dB	70dB
Bias adjustable range	±15%	±15%
APMR time	4 sec.	4 sec.
Recording calibration frequency	400Hz	–
(Mechanical)		
Motors Capstan drive	Brushless FG servo	Brushless FG servo
Reel drive	Governor-less DC motor	Governor-less DC motor
Head drive	Governor-less DC motor	Governor-less DC motor
Wow and flutter (MTT-111 JIS WRMS)	0.02%	0.035%
Speed tolerance (MTT-111)	±0.5%	±0.5%
Rewind/fast forward time (C-60)	75 sec.	75 sec.
	Dual capstan	Single capstan
(General)		
Power requirements	AC 120V 60Hz	AC 120V 60Hz
Power consumption		
Dimensions		
Width	18-1/8" (460mm)	18-1/8" (460mm)
Height	5-3/16" (132mm)	4-1/2" (114mm)
Depth	12-1/8" (308mm)	12-13/64" (310mm)
Weight	18 lbs. 1 oz. (8.2kg)	15 lbs. 7 oz. (7kg)

COMPACT DISC PLAYER	DA-610
Total harmonic distortion (1kHz, with 20kHz LPF)	0.005%
Frequency response (±0.5dB)	5Hz–20kHz
Signal-to-noise ratio (with 20kHz LPF & IHF-A F)	over 90dB
Separation (at 1kHz, with 20kHz LPF)	over 90dB
Dynamic range	over 90dB
Output level	2.0V
Output impedance	1k ohms
(General)	
Power requirements	AC 120V 60Hz
Power consumption	10W
Dimensions	
Width	18-1/8" (460mm)
Height	3-9/16" (90mm)
Depth	12-1/8" (308mm)
Weight	13.2 lbs. (6kg)

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- Specifications and design are subject to change without notice for improvements.
- Actual color of product exterior may be slightly different from printed product photo.
- All Kyocera audio products come with a warranty. At the time of your purchase, please be sure to obtain it from your Kyocera dealer and ensure that the dealer fills it in for you.

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